

CLAIMS

1. An anti-fouling composition comprising  
5 (i) a surface coating material;  
(ii) an enzyme obtained or obtainable from a marine organism; and  
(iii) (a) a substrate for the enzyme; and/or  
10 (b) a precursor enzyme and a precursor substrate, wherein the precursor enzyme and the precursor substrate are selected such that a substrate for the enzyme is generatable by action of the precursor enzyme on the precursor substrate;  
wherein the enzyme and the substrate are selected such that an anti-foulant compound is generatable by action of the enzyme on the substrate.
- 15 2. A composition according to claim 1 wherein the enzyme is obtained or is obtainable from a marine alga.
- 20 3. A composition according to claim 1 wherein the enzyme is obtained or is obtainable from *Chondrus crispus*.
4. A composition according to claim 1 wherein the enzyme is hexose oxidase.
- 25 5. A composition according to claim 4 wherein the hexose oxidase enzyme comprises the amino acid sequence set out in SEQ ID No 2 or a variant, homologue, derivative or fragment thereof.
6. A composition according to claim 1 wherein the substrate is a sugar.
7. A composition according to claim 6 wherein the sugar is glucose.
- 30 8. A composition according to claim 1 wherein the composition comprises a

precursor enzyme and a precursor substrate, wherein the precursor enzyme and the precursor substrate are selected such that the precursor substrate generates a substrate for the enzyme by action of the precursor enzyme on the precursor substrate.

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9. A composition according to claim 8 wherein the precursor enzyme is amyloglucosidase.

10. A composition according to claim 8 wherein the precursor substrate is starch.

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11. A composition according to claim 1 wherein the composition further comprises a binder to immobilise at least one of the constituents of the composition, preferably to immobilise the enzyme.

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12. A coating consisting of a composition according to claim 1.

13. A coating according to claim 12 formulated for treatment of a surface selected from outdoor wood work, external surface of a central heating system, and a hull of a marine vessel.

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14 A marine anti-foul consisting of a composition according to claim 1.

15. A marine anti-foul according to claim 14 wherein the anti-foulant is self-polishable.

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16. A method for releasing an anti-fouling compound from a surface coating, which method comprises incorporating in a surface coating

- (i) an enzyme obtained or obtainable from a marine organism; and
- (ii) (a) a substrate for the enzyme; and/or

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(b) a precursor enzyme and a precursor substrate, wherein a substrate for the enzyme is generated by action of the precursor enzyme on the precursor

substrate;  
wherein the anti-fouling compound is generated by action of the enzyme on the substrate.

5 17. A composition as substantially hereinbefore described with reference to the Examples.

18. A coating as substantially hereinbefore described with reference to the Examples.

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19. A marine anti-foul as substantially hereinbefore described with reference to the Examples.

15 20. A method as substantially hereinbefore described with reference to the Examples.

21. An anti-fouling composition comprising:

- (i) a surface coating material;
- (ii) an enzyme obtained or obtainable from a marine organism; and
- 20 (iii) a substrate for the enzyme;

wherein the enzyme is hexose oxidase, and the substrate is sugar, such that an anti-foulant compound is generated by action of the enzyme on the substrate.

22. An anti-fouling composition comprising:

- (i) a surface coating material;
- 25 (ii) an enzyme obtained or obtainable from a marine organism; and
- (iii) a substrate for the enzyme;

wherein the enzyme is hexose oxidase having the amino acid sequence set forth in SEQ ID NO: 2, and the substrate is sugar, such that an anti-foulant compound is generated by action of the enzyme on the substrate.

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23. An anti-fouling composition comprising:

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- (i) a surface coating material;
- (ii) an enzyme obtained or obtainable from *Chondrus cripus*; and
- (iii) a substrate for the enzyme;

wherein the enzyme is hexose oxidase, and the substrate is sugar, such that an anti-foulant compound is generated by action of the enzyme on the substrate.

24. An anti-fouling composition comprising:

- (i) a surface coating material;
- (ii) an enzyme obtained or obtainable from *Chondrus cripus*; and
- (iii) a substrate for the enzyme;

wherein the enzyme is hexose oxidase having the amino acid sequence set forth in SEQ ID NO: 2, and the substrate is sugar, such that an anti-foulant compound is generated by action of the enzyme on the substrate.

15 25. An anti-fouling composition comprising:

- (i) a surface coating material;
- (ii) an enzyme obtained or obtainable from a marine organism; and
- (iii) a substrate for the enzyme;

wherein the enzyme is hexose oxidase, and the substrate is glucose, such that an anti-foulant compound is generated by action of the enzyme on the substrate.

26. An anti-fouling composition comprising:

- (i) a surface coating material;
- (ii) an enzyme obtained or obtainable from a marine organism; and
- (iii) a substrate for the enzyme;

wherein the enzyme is hexose oxidase having the amino acid sequence set forth in SEQ ID NO: 2, and the substrate is glucose, such that an anti-foulant compound is generated by action of the enzyme on the substrate.

30 27. An anti-fouling composition comprising:

- (i) a surface coating material;

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- (ii) an enzyme obtained or obtainable from *Chondrus cripus*; and
- (iii) a substrate for the enzyme;

wherein the enzyme is hexose oxidase, and the substrate is glucose, such that an anti-foulant compound is generated by action of the enzyme on the substrate.

5 28. An anti-fouling composition comprising:

- (i) a surface coating material;
- (ii) an enzyme obtained or obtainable from *Chondrus cripus*; and
- (iii) a substrate for the enzyme;

wherein the enzyme is hexose oxidase having the amino acid sequence set forth in  
10 SEQ ID NO: 2, and the substrate is glucose, such that an anti-foulant compound is generated by action of the enzyme on the substrate.

29. A composition according to claim 4 wherein the hexose oxidase enzyme comprises the amino acid sequence set out in SEQ ID NO:2.